# MONTHLY NOTICES

OF THE

# ROYAL ASTRONOMICAL SOCIETY.

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Dr. LEE, President, in the Chair.

Major Strange, H.M. Indian Army;
Dr. Nottingham, Liverpool;
H. J. S. Smith, Esq., Balliol College, Oxford; and
Lieut. Cuspendale, H.M.I.N.,

were balloted for and duly elected Fellows of the Society.

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The twenty-ninth volume of the *Memoirs* is ready for delivery. It contains the longer papers read at the Meetings of the Society, and also the twentieth volume of the *Monthly Notices*, reprinted in a quarto form, thus giving a complete account of the proceedings of the Society during the year. The price is 5*s*. to Fellows, and 15*s*. to the public.

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*The Astronomische Nachrichten.*

The publication of the fifty-fifth volume has recently commenced. The price per volume is 15*s*., payable in advance. Two volumes are generally published in the course of the year. Fellows of the Society desiring to become subscribers may send a notification to that effect to Mr. Williams, the Assistant Secretary of the Society, who will receive the subscription.

*On the Morning Illumination of two disrupted Lunar Craters, unnoticed by Webb and unnamed by Beer and Mädler.* By W. R. Birt, Esq.

On a few former occasions I have presented to the attention of the Society notices of the morning and evening illuminations of lunar craters, possessing features that withdraw them from the general type of the cup-shaped cavities abounding on the Moon's surface, inasmuch as their rings are incomplete and they are mostly found in localities of a peculiar character, viz., on the borders of the *Maria*, the disrupted portions of the rings being in the cases quoted towards the *Maria*, see *Monthly Notices*, vol. xx. p. 69, *Fracastorius;* p. 211, *Hippalus;* and p. 280, *Schröter's Newton.*

On the evening of March 22, 1861, between $6^h\ 50^m$ and $9^h\ 15^m$ G.M.T., I had an opportunity of observing the southern part of the *Mare Humorum*, then under an early morning illumination; the eastern portion, with the mountains composing it, being observed beyond the terminator as splendid lucid points. *Gassendi* was a most magnificent object, the atmosphere being in a fine state for definition, many minute features were brought out not ordinarily discernible.

The two craters marked on Beer and Mädler's map, and also on Webb's index map, 229 and 230, as abutting on the southern part of the *Mare Humorum*, are *Vitello* and *Doppelmayer*. The first, *Vitello*, is a perfectly ringed crater, with a central mountain of somewhat considerable dimensions, it is seen under this illumination to rise magnificently from the floor of the crater, the shadow of the western wall partially surrounding its base.

The second, *Doppelmayer*, is an imperfectly ringed crater, the imperfection indicating a destruction of the mountains that formed this part of the wall, being, as in the cases already quoted, *towards the Mare.* This crater has a central mountain, casting at this epoch a long shadow towards the eastern part of the ring.

Between these craters, and filling the entire space, are the remains of a large crater, having to the south-east a smaller one, the level of the larger partially destroyed crater appearing to be slightly depressed below the level of the adjoining portion of the *Mare.*

On the western margin this larger crater does not appear under this illumination to possess a wall proper to itself, but at an epoch about 24 hours later, as seen on March $23^d\ 8^h\ 20^m$, the illumination then brings out very distinctly its western wall, just touching the wall of *Vitello* and extending each way, on the north to the abrupt termination of the broken wall, where it meets the general level of the *Mare*, and on the south to the abrupt termination of the broken wall of the smaller crater to the south-east. The interior shadows of the western

walls of both craters are well marked at the later epoch, and the original outline of the larger crater traced by means of a few scattered peaks, or rather blocks, to its junction with the wall of *Doppelmayer*, where that also is broken by the disruptive force which appears to have acted simultaneously on the three craters.* Under this illumination *Doppelmayer* offers a fine example of the action of this overspreading force, the north-west part *towards the Mare*, within a portion of the standing walls, as far as the central mountain, presenting a slightly greenish grey appearance, while the other half of the crater remains in its original, or at least former state, the contrast of the two being very decided. The illumination at about 12·25 days of the Moon's age is much more suitable for bringing out the features of the partial destruction of the walls of the three craters than the earlier illumination at 11·25 days, it is then that the eastern wall of *Vitello* with its sharp curvature casting a deep and extensive shadow on the western portion of the floor of the large disrupted crater suggests the idea that *Vitello* is a more recent crater than either *Doppelmayer* or the large unnamed crater.

A little to the south-east of this large disrupted crater I observed a smaller one, the south-east portion of its ring being *exterior* to what may be considered the south-east boundary of the larger crater, which evidently appears to have been torn away. A ridge extending between the walls of the smaller crater and *Doppelmayer* gives a certain feature of angularity to the rampart composed of the walls of the two craters and the included ridge; and this is so marked as (in addition to the position of the smaller crater, indicating its more recent formation, being partly on and partly off the area of the larger crater), also to confirm the idea of the different epochs of the origin of the two.

While the wall of the smaller crater is complete on the south and south-east, its northern portion has been partially destroyed; in this respect it agrees very closely with the features presented by the larger crater, the whole of the walls of which, except those mentioned above, having been destroyed; a few peaks remain on the northern ring of the smaller crater, which thus has some affinity with the crater *Fracastorius*. The south-west portion of the ring casts a deep shadow on the floor, which appears to be of a rather lower level than the crater on which it partly stands.

It will be seen, on referring to the *Monthly Notices*, vol. xx. p. 211, that *Hippalus* is situated on the north-west border of an arm of the *Mare Humorum*, and that the disrupted portion

* At the *earliest* epoch of illumination of the large disrupted crater, viz., about 10·6 days of the moon's age, and about 2·6 days after the epoch of greatest south-east libration, I have seen the circular outline of its ring nearly complete, the blocks mentioned in the text catching the first rays of the rising sun.

*faces* this arm. On viewing these features that are thus common to the disrupted craters situated on the borders of this *Mare*, one almost feels disposed to venture a conjecture that here we have the means of approximating to the successive ages of some of the crateriform productions on the lunar surface. "Every thing which tends to throw light on the manner in which the inequalities on the Moon's surface have originated," says Arago, "is eminently deserving of attention." Taking *Doppelmayer*, south-east, and *Hippalus*, north-west, we have evidence of the disruptive force existing between them, in fact extending south-eastward, south-westward, and north-westward. Has this force any connexion with the overspreading of the *Mare* with its plain-like covering? Assuming for a moment that such is the case, we do not know that it is so, we have the two craters named with the two unnamed more ancient than the overspreading of the *Mare* itself—the small unnamed crater being more recent than the one near which it stands and which it partially covers, and probably more recent than the other three. The age of *Vitello*—with its still perfect walls closely adjoining as they do the western flank of the large unnamed crater—more recent than the period of the overspreading of the *Mare;* and the magnificent *Gassendi*, also more recent than this period, probably marking an epoch, the most recent of the violent outbursts which produced such magnificent craters as the one just named, *Copernicus, Tycho, Plato*, and several others which appear to be most perfect, *Copernicus* having suffered considerably from degradating agencies.

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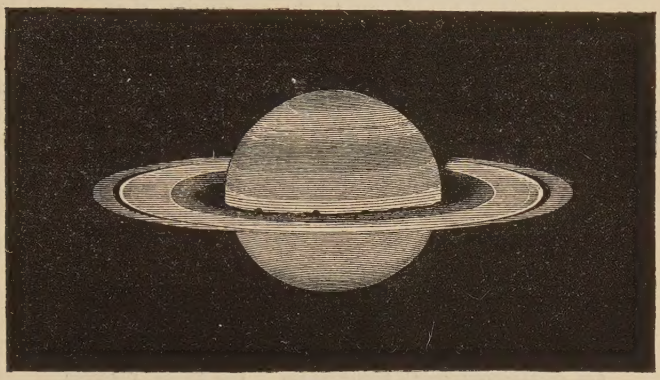
*On an Appearance on the Surface of Jupiter, which passed rapidly over the Disk of the Planet.* By W. R. Birt, Esq.

On the 22d of March, 1861, at about $7^h\ 20^m$ G.M.T., I noticed near the eastern limb of *Jupiter* a difference in the limb in the breadth of the northern belt, a small portion near the limb was about half the breadth of the remainder, which extended to near the western limb, the termination of the half-breadth of the broadest was rugged and irregular; about 40 minutes later, viz. at $8^h$, this ragged portion occupied the centre of the disk with a somewhat dark spot near its termination. At $9^h\ 15^m$ this portion had arrived within a tenth of the longest diameter of the disk from the western limb. When next I noticed *Jupiter* it was gone, and he had two well-defined narrow belts; at $11^h$ I observed a fine line-like belt just north of the narrow belt.

Was this an instance of a rapid propagation of cloud in the atmosphere of the planet?

*Observations of Saturn.* By Warren De La Rue, Esq.

While observing *Saturn* during the last few weeks my attention has been attracted by the very irregular outline of the shadow crossing the planet's northern hemisphere just above the inner dark ring. I noticed this very distinctly on the night of the 7th instant, when my 13-inch Newtonian Equatoreal bore a power of 700 perfectly well. On that and other occasions I scrutinised the planet with a very beautiful achromatic by Dallmeyer (the late Mr. Ross's son-in-law) of $4\frac{1}{8}$ inches aperture, and I noticed the same appearance, so that



astronomers possessing instruments of moderate size may observe the phenomenon provided they define perfectly. It is right to mention that the achromatic I refer to shows the 5th and 6th stars in the trapezium of *Orion*, and that on a clear night I even made out *Enceladus*, having first observed it, however, with the 13-inch reflector.

*Cranford, April* 11, 1861.

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*Photographs of the Total Eclipse.*
By Warren De La Rue, Esq.

I am desirous of an opportunity of making known to Astronomers that some further delay will take place before copies of the two totality pictures can be printed off for circulation. In order to show the details of the protuberances it is necessary to enlarge the copies to about 9 inches in diameter, and from these to make a sufficient number of negatives to print the paper copies it is proposed to publish.

A few perfect positives were obtained soon after the return of the Himalaya Expedition from Spain, but they have been used up in making the engraved plates in the manner already made known to the Society. Since the size of the intended volume of Reports has been settled by the Astronomer Royal, several attempts have been made to procure the positive transparent enlarged copies, which will serve to make the negatives to print from, but hitherto without success, in consequence of the want of favourable weather. Up to yesterday all attempts to multiply copies have failed, for nothing short of an unobscured brilliant Sun will penetrate the dense original negatives so as to show the details of the protuberances; after spending 21 days in fruitless attempts I have come to the conclusion that it will be better to defer for a few weeks longer any further trials. An exposure of 40 to 45 seconds suffices in brilliant sunlight to produce a perfect picture, but an exposure of 15 minutes fails to produce a picture worthy of circulation when the Sun is obscured by the mists which have been prevalent.

*Cranford, April* 11, 1861.

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*On a Micrometric Diaphragm.* By L. H. Casella.

The impulse given of late to the study of solar physics by the accurate series of observations on the Solar Spots by Mr. Carrington, Dr. Wolfe, Schwabe, and others, is greatly calculated to enlist the energies of amateurs, and many a series of diagrams of the Solar Disk might be constructed, were a simple and easy method of obtaining the position of those spots readily attainable.

About two years since I constructed for Mr. Birt a micrometric diaphragm, which appears so suitable for obtaining approximate positions of the spots as to induce me to submit it to the attention of the Society, especially as I consider it will enable an observer, from a series of observations only, to lay down diagrams of the spots from day to day, which may be compared at leisure, and from which several questions may be approximately answered by many in whose hands the employment of more delicate instruments or methods with the calculations attendant on them would in a great measure prevent.

The diaphragm is of glass, fitted to the focus of the eyepiece, and engraved with equidistant parallel lines dividing the field into about thirty-five divisions, each line terminating a little beyond the transverse diameter of the field, except every fifth line, which extends quite across the field.

The value of each division can easily be ascertained in the usual way.

In observing the position of a spot, the upper or lower limb of the Sun is made to run along the lowest or highest line that stretches across the field; when this is nicely adjusted the spot is seen to traverse the field either on a line or somewhere between two, the proper adjustment being known by the spot keeping on a given line or being equally distant from the lines above and below it throughout its transit: it is then easy to see the number of divisions, and by estimating the parts of a division by which the spot is distant from the limb, tenths can be readily estimated and the approximate diameters of spots easily determined.

When the positions of all the spots visible are determined from the upper or lower limbs, the diaphragm is shifted a quarter of a revolution by simply turning the eye-piece in the tube, and each spot in succession is made to run along the extremities of the shorter lines. As the spots transit each line, so the preceding and following limbs also transit each line, and the remaining co-ordinate is determined by the number of divisions and parts by which the spot follows the preceding, or precedes the following limb.

Not only is the diaphragm suitable for obtaining these positions approximately to about 6″, but it is also useful for readily laying down groups, the observer being prepared with paper ruled in squares on a large scale, when the co-ordinates of the principal members of the group are obtained as above. The minor spots may be inserted in their proper places in the manner of sketching; a little practice will soon enable an observer to lay down all the features of a group within the limits above indicated.

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*Extract of a Letter from Dr. Winnecke to the Rev. R. Main, dated* 1861, *March* 26.

"In No. 3 (of the *Monthly Notices*) Mr. Carrington brings forward the question concerning the figure of the sun—would it not be desirable to remind the Astronomical Society, on this opportunity of the measures made by Schlüter and Wichmann with the Königsberg heliometer, which, although they have fallen into oblivion, seem to determine the question for the present position of the science of observation? Schlüter observed the sun on five days in such a way as to make one measured diameter pass through the pole, while the other was at right angles to it. For this purpose he prepared an ephe-

meris computed for the position of the sun's equator at that time. The following are the values obtained:

| | Angle of Position of Pole. | Polar Diameter. | Equatoreal Diameter. |
|---|---|---|---|
| | ° ′ | ′ ″ | ′ ″ |
| 1842, Oct. 22 | 334 17 | 31 60·30 | 31 60·09 |
| 1843, Feb. 28 | 21 36 | 59·82 | 59·41 |
| ,, March 17 | 24 56 | 59·59 | 59·75 |
| ,, March 21 | 25 27 | 59·96 | 60·06 |
| ,, June 4 | 14 9 | 59·96 | 60·33 |

Therefore the equatoreal diameters are greater by,

″
−0·21
−0·41
+0·16
+0·10
+0·37

from whence in the mean there is perfect equality between the equatoreal and polar diameters.

"Nearly the same result is arrived at from measures made at the same place (*Königsberg Observations*, Part 30), in which diameters differing by angles of position amounting to 30° were employed.

"The diameter given above does not differ materially from that commonly received, as deduced from meridian observations. For the reduction of a series of meridian observations there has been for security employed that diameter of the Sun, deduced from the observations themselves, which corresponds to the instrument and the observer. But, when the question is to employ the true value of the diameter, there is no doubt that that which is derived from the observations made with the Königsberg heliometer deserves the preference. For no other instrument is the entire freedom from irradiation so evidently proved as for the Königsberg heliometer. The inequalities of the screw, and the value of one of its revolutions, have been investigated in an incomparable manner.

"The only thing which could have been wished for more in the preceding measures consists in the want of a satisfactory explanation of the external circumstances under which these observations were made. According to Schlüter's account it would appear as if he always observed with a sky densely covered, so that an anomalous heating of the object-glass and of the screws (the latter of which in particular were protected by white paper placed before them) is not to be feared. In Wichmann's observations this has not been always the case, so that Schlüter's results without doubt deserve the preference.

"Besides this, the intimation that possibly the thermometer-coefficient for the value of a revolution of a screw has not been taken into account with sufficient accuracy, has plainly a relation only to the absolute value of the diameter, without in the least affecting the conclusions respecting the figure of the Sun."

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*Observations of the Solar Eclipse of the 11th Jan.*, 1861, *at the Sydney Observatory.* By W. R. Scott, Esq., Astronomer for N. S. Wales.

In a letter dated February 19th, 1861, addressed to the Secretary, Mr. Scott writes:—

"I send herewith the results of my observations of the solar eclipse of January 11th.

"The eclipse was observed with the portable equatoreal telescope, $3\frac{1}{4}$ inches aperture. I obtained measurements of some chords, but cannot attach any value to them, owing to great instability of the mounting.

"The most accurate observation was the time of first contact of the Moon's limb with the first of two very black well-defined spots in the midst of a group of less defined spots.

"I regret that I was unable to leave the Observatory so as to visit a part of the colony where the eclipse was annular; neither have I received reports of any observations of the annular eclipse.

"The temperature observations were made with a black-bulb thermometer in an exhausted glass tube.

"I give the results from $1^h$ P.M., having reason to believe that those made before that time were not trustworthy.

"I am happy to state that I have reason to hope shortly to be enabled to produce some better work than the defective character of my instrumental means has hitherto allowed; as an equatoreal telescope by Mertz, with a 9-inch object-glass, is on its way from England.

"Being somewhat of a novice in practical astronomy, and isolated from the rest of the astronomical world, I shall feel grateful for any suggestions from your Society as to the best mode of co-operating (when my new instrument arrives) with the astronomers of Europe and America."

The observations referred to in the letter are,—

| | Syd. M.T. h m s |
|---|---|
| Commencement of Eclipse, Jan. 11 | 0 38 14 |
| Contact with spot | 0 53 20 |
| End of Eclipse | 3 28 15 |

Observations with black-bulb thermometer,

| h m | ° | h m | ° |
|---|---|---|---|
| 1 0 | 125·6 | 2 25 | 96·0 |
| 1 15 | 117·5 | 2 30 | 97·6 |
| 1 20 | 113·8 | 2 35 | 98·4 |
| 1 25 | 112·0 | 2 40 | 100·0 |
| 1 30 | 110·5 | 2 45 | 102·0 |
| 1 35 | 107·0 | 2 50 | 104·0 |
| 1 40 | 104·8 | 2 55 | 106·7 |
| 1 45 | 103·6 | 3 0 | 109·7 |
| 1 50 | 100·3 | 3 5 | 112·6 |
| 1 55 | 98·8 | 3 10 | 115·5 |
| 2 0 | 97·7 | 3 15 | 117·3 |
| 2 5 | 96·6 | 3 20 | 119·0 |
| 2 10 | 95·3 | 3 25 | 121·1 |
| 2 15 | 95·0 | 3 30 | 121·2 |
| 2 20 | 94·8 | | |

The sky was perfectly clear throughout.

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*Note on one of the Comites of β Geminorum.*
By the Rev. T. W. Webb.

On reference to the Bedford Catalogue, it will be found that the third attendant of *β Geminorum* was described by Admiral Smyth, in 1832, as of equal brightness with the second, C of his nomenclature, which he rates of $11\frac{1}{2}$ magnitude. It now appears, with my $5\frac{1}{2}$-inch object-glass, about as much inferior to B, $12\frac{1}{2}$ of the Admiral's scale, as B is below C; and as Sir James South's Equatoreal of 5 inches had shown but two companions some years before the date of the Bedford Catalogue, there is, perhaps, ground to suspect a variation in its light.

*Hardwick Parsonage, April* 22, 1861.

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*Results of the Observations of Small Planets made with the Transit-circle; Occultations of Stars by the Moon; and Eclipses, Occultations, and Transits of Jupiter's Satellites; observed at the Royal Observatory, Greenwich, during the month of March* 1861.

(*Communicated by the Astronomer Royal.*)

*Massilia* (20).

| Mean Solar Time of Observation. | R.A. from Observation. | N.P.D. from Observation. |
|---|---|---|
| h m s | h m s | ° ′ ″ |
| 1861, March 4 7 3 5·9 | 5 53 10·15 | 67 26 37·61 |

## *Hebe* (6).

| Mean Solar Time of Observation. | R.A. from Observation. | N.P.D. from Observation. |
|---|---|---|
| h m s | h m s | ° ′ ″ |
| 1861, March 4 12 24 5·5 | 11 15 2·54 | 74 24 53·51 |
| 6 12 14 28·6 | 11 13 17·20 | 74 5 37·00 |
| 9 12 0 3·6 | 11 10 39·41 | 73 37 58·80 |
| 11 11 50 27·9 | 11 8 55·24 | 73 20 12·72 |
| 13 11 40 53·3 | 11 7 12·26 | 73 3 5·89 |
| 16 11 26 34·5 | 11 4 40·69 | 72 38 49·60 |
| 20 11 7 37·7 | 11 1 27·06 | 72 9 10·61 |
| 21 11 2 55·8 | 11 0 40·92 | 72 2 20·34 |
| 22 10 58 14·1 | 10 59 55·00 | 71 55 39·41 |
| 28 10 30 25·2 | 10 55 40·86 | 71 20 8·45 |

## *Parthenope* (11).

| Mean Solar Time of Observation. | R.A. from Observation. | N.P.D. from Observation. |
|---|---|---|
| h m s | h m s | ° ′ ″ |
| 1861, March 4 12 47 59·4 | 11 39 0·35 | 82 8 19·67 |
| 6 12 38 24·6 | 11 37 17·06 | 81 53 59·27 |
| 8 12 28 48·4 | 11 35 32·45 | 81 39 37·24 |
| 9 12 23 59·0 | 11 34 38·78 | 81 32 23·87 |
| 11 12 15 21·4 | 11 32 52·91 | 81 18 16·04 |
| 13 12 4 43·4 | 11 31 6·23 | 81 4 17·68 |
| 16 11 50 16·0 | 11 28 26·07 | 80 43 55·15 |
| 20 11 31 2·7 | 11 24 55·90 | 80 18 7·69 |
| 21 11 26 15·9 | 11 24 4·79 | 80 11 58·35 |

## *Melpomene* (18).

| Mean Solar Time of Observation. | R.A. from Observation. | N.P.D. from Observation. |
|---|---|---|
| h m s | h m s | ° ′ ″ |
| 1861, March 4 9 40 10·4 | 8 30 40·50 | 73 47 24·79 |
| 6 9 31 32·4 | 8 29 54·18 | 73 35 16·72 |
| 8 9 23 1·6 | 8 29 15·08 | 73 23 46·91 |
| 11 9 10 28·5 | 8 28 29·56 | 73 7 40·80 |
| 13 9 2 15·7 | 8 28 8·51 | 72 57 42·31 |
| 21 8 30 34·9 | 8 27 54·96 | 72 23 50·57 |
| 22 8 26 45·0 | 8 28 1·02 | 72 20 21·47 |
| 23 8 22 57·0 | 8 28 8·89 | 72 16 55·16 |
| 28 8 4 20·4 | 8 29 11·99 | 72 2 1·79 |

## *Fides* (87).

| Mean Solar Time of Observation. | R.A. from Observation. | N.P.D. from Observation. |
|---|---|---|
| h m s | h m s | ° ′ ″ |
| 1861, March 8 8 48 23·5 | 7 54 31·35 | 65 28 40·92 |
| 16 8 18 23·0 | 7 55 58·33 | 65 49 21·15 |

### *Ausonia* (68).

| Mean Solar Time of Observation. | | R.A. from Observation. | N.P.D. from Observation. |
|---|---|---|---|
| | h m s | h m s | ° ′ ″ |
| 1861, March 15 | 11 5 55·2 | 10 40 1·43 | 82 55 2·74 |
| 16 | 11 1 2·9 | 10 39 4·94 | 82 52 2·07 |

### *Angelina* (64).

| Mean Solar Time of Observation. | | R.A. from Observation. | N.P.D. from Observation. |
|---|---|---|---|
| | h m s | h m s | ° ′ ″ |
| 1861, March 15 | 11 51 58·3 | 11 49 51·45 | 90 43 18·14 |
| 22 | 11 47 11·6 | 11 49 0·53 | 90 38 11·56 |

The observations in N.P.D. of *Ausonia* and *Angelina* have been corrected for Refraction only; those of all the others for both Refraction and Parallax.

### *Occultations of Stars by the Moon.*

| Day of Obs. | Phenomenon. | Moon's Limb. | Mean Solar Time. | Observer. |
|---|---|---|---|---|
| | | | h m s | |
| 1861, Mar. 19 | 5 Geminorum disapp. | Dark | 8 53 55·4 | D. |
| 21 | B.A.C. 2683 disapp. | Dark | 9 43 39·3 | C. |
| 21 | B.A.C. 2683 reapp. (*a*) | Bright | 10 20 7·4 | C. |

(*a*), The star was slightly separated from the limb when first seen.

The initials D. and C. are those of Mr. Dunkin and Mr. Criswick.

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### *Eclipses, Occultations, and Transits of Jupiter's Satellites.*

| Day of Observation. 1861. | Satellite. | Phenomenon. | Mean Solar Time. | Observer. |
|---|---|---|---|---|
| | | | h m s | |
| Mar. 4 | III | Ecl. reapp. | 7 23 17·0 | A. D. |
| 4 | I | Ingress, Bisection | 10 35 59·6 | J. C. |
| 4 | I | ,, last cont. | 10 38 29·2 | J C. |
| 4 | I | Egress, last cont. | 12 57 32·3 | A. D. |
| 6 | I | ,, bisection | 7 20 26·8 | K. |
| 6 | I | ,, last cont. | 7 22 26·5 | K. |
| 11 | III | Ecl. reapp. | 11 21 15·1 | E. |
| 11 | I | Ingress, bisection | 12 20 25·4 | E. |
| 11 | IV | Occ. disapp. bis. | 13 31 43·8 | E. |
| 16 | II | Ecl. reapp. | 7 57 59·9 | E. |
| 21 | I | Ecl. reapp. | 8 52 17·7 | C. |
| 21 | II | Ingress, bis. (*a*) | 10 55 49·4 | C. |
| 28 | IV | Occ. reapp. bis. | 9 38 1·6 | E. |

(*a*) The planet extremely tremulous and blurred; the observation very unsatisfactory.

The initials E., C., J. C., K. and A. D. are those of Messrs. Ellis, Criswick, Carpenter, Kerschner, and Davis.

*Note.*—In the *Monthly Notices* for June, 1860, vol. xx., No. 8, p. 328, the places of two objects are given for *Thetis*, with the remark that their proximity made it doubtful which was the planet, though the second was thought to have the greater probability, on account of its magnitude. That this second, marked (*b*) R.A. $14^h\ 3^m\ 52^s{\cdot}32$, N.P.D. $92°\ 40'\ 11''{\cdot}98$, really was *Thetis*, was proved by an observation with the transit-circle on 1861, April 11, when an object was seen answering to (*a*), but nothing in the place of (*b*).

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*Occultations of Stars by the Moon, observed at Forest Lodge, Maresfield, Sussex.* By Capt. W. Noble.

Sunday, February 17, 1861.

Occultation of 23 *Tauri* by the Moon.

The star disappeared instantaneously at the Moon's dark limb at $7^h\ 51^m\ 7^s{\cdot}7$ L.S.T. = $9^h\ 52^m\ 59^s{\cdot}75$ L.M.T.

Owing to the dense haze, the reappearance could not be observed.

Power 135 (with positive eye-piece) adjusted on the star.

Thursday, March 21, 1861.

Occultation of B.A.C. 2683 by the Moon.

| | h m s | h m s |
|---|---|---|
| The star disappeared instantaneously at the Moon's dark limb at ..... | 9 43 11·4 L.S.T. = | 9 45 39·05 L.M.T. |
| and reappeared at..... | 10 17 46·6 L.S.T. = | 10 20 8·58 L.M.T. |

It was very faint at its reappearance, owing to the overpowering brightness of the Moon, and the time of its apparition may therefore be $+0^s{\cdot}5$ in error.

Power 115 adjusted on the star.

My 4·2 inches Equatoreal was employed in each observation.

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In a letter to Mr. Carrington, dated 11th April, 1861, Capt. Noble writes:—

"Inasmuch as I think that every abnormal circumstance, however trivial, should be placed upon record, I may tell you that while examining the Sun on Thursday, March 28th, at $2^h\ 30^m$ G.M.T., with a power of 74, I found that the carefully determined solar focal length of the object-glass, with the eye-piece employed, was *shortened* exactly 0·11 inch! There was a good deal of haze about at the time. The barometer stood at $29^{in.}\cdot340$, and the thermometers outside of the observatory at 55°. I can find no notice in any work to which I have access of this curious phenomenon of a considerable alteration in the focal length of a telescope, nor can I presume to theorise upon the matter. The quantity by which the focus was changed was too great to have had its origin in any unusual condition of my own eye; besides which, when the sky cleared, the focus lengthened again to its standard distance. It seems to me that in such alteration we have an explanation of a fertile source of many discrepancies which occur in accounts of the same phenomenon as viewed by different observers, and perhaps even a better one of the inconsistency of observations made by the same individual."

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*Observations and Elements of Comet III.* 1860. By Dr. C. G. Moesta, Director of the National Observatory of Santiago de Chile.

I enclose some observations of Comet III., 1860, seen by me for the first time on the evening of July 10th, and which has been observed here on several nights until the 13th of September. Most of the comparison-stars are probably not to be found in the Catalogues of southern stars, and I intend to determine their positions by the Meridian-Circle as soon as the season will permit it. On the 13th of August the Comet was compared with $\nu$ and $\varkappa$ *Centauri*, and on the 12th of September with Taylor 8002. Adopting the positions of these stars, such as they are given in the B.A.C. and Taylor's Catalogue, I obtained the following positions of the Comet:

| | G.M.T. | App. R.A. | App. Decl. |
|---|---|---|---|
| | h m s | h m s | ° ′ ″ |
| August 13 | 14 43 8·7 | 13 47 26·92 | −40 19 32·8 |
| September 12 | 12 48 30·8 | 15 2 50·64 | −47 24 1·6 |

With approximate elements I formed a normal place of the three observations made at Bonn and Altona (*Ast. Nach.* No. 1266), and after having applied the corrections for parallax and aberration, and reducing all observations to the mean equator for 1860·0, I collected the following places of the Comet:

| G.M.T. | R.A. | Decl. |
|---|---|---|
| | h m s | ° ′ ″ |
| Altona and Bonn, June 23·50000 | 6 45 40·12 | +42 18 45·6 |
| Washington, July 14·56297 | 10 59 11·56 | −1 4 7·5 |
| Santiago, Aug. 13·60642 | 13 47 24·98 | −40 19 9·7 |
| Santiago, Sept. 12·52198 | 15 2 48·07 | −47 23 38·5 |

The observation of July 14th (*Ast. Nach.* No. 1273) is based upon the following position of Weisse X, 1099, as determined by me with the Meridian Circle:

For 1860·0.

Mean R.A. $= 11^h\ 1^m\ 7^s{\cdot}76$, Decl. $= -1^\circ\ 8'\ 44''{\cdot}4$

By variation of the distances of the Comet from the Sun I found the adjoined parabolic elements, which represent the first and last of the given places, leaving the following errors in the middle places,—

| | O − C. $\delta$ long. | O − C. $\delta$ lat. |
|---|---|---|
| | ″ | ″ |
| Washington, July 14 | −7·1 | − 2·5 |
| Santiago, August 14 | +6·7 | −12·4 |

*Elements.*

T = 1860, June 16·05950 G.M.T.

$\Omega$ = 84° 40′ 3·8″
$\varpi$ = 161 31 59·3
} Mean Eq., 1860·0.

$i$ = 79 18 33·76

Log $q$ = 9·4667171.

Motion direct.

It appears, therefore, that a parabola will represent very well the observations during three months, and that the excentricity of the orbit must be very nearly equal to unity.

*Santiago de Chile, Feb.* 17, 1861.

## *Ephemeris of the Variable Stars for* 1861. By Norman Robert Pogson, Esq., Director of the Madras Observatory.

In this ephemeris the initials in the sixth column represent the following names:—A., Argelander; B., Baxendell; K., Krüger; P., Pogson; S., Schönfeld; W., Winnecke.

| Star. | Probable Mag. | Mean Place, 1860. R.A. h m s | N.P.D. ° ′ | Times of Maxima. | Authority. |
|---|---|---|---|---|---|
| T Piscium | 9·5 | 0 24 46 | 76 14 | Feb. 17, July 10, Nov. 30 ... | S. |
| α Cassiopeiæ | 2·0 | 0 32 35 | 34 14 | Feb. 18, May 8, July 26, Oct. 13, Dec. 31 | A. |
| R Arietis | 8·0 | 2 8 10 | 65 36 | Jan. 23, July 28 ... ... | W. & B. |
| ο Ceti | 2·0 | 2 12 17 | 93 37 | August 6 ... ... | A. |
| R Tauri | 8·0 | 4 20 38 | 80 9 | June 15 ... ... | W. |
| S Tauri | 10·0 | 4 21 32 | 80 22 | February 27 ... ... | W. |
| R Orionis | 9·0 | 4 51 22 | 82 5 | June 6 ... ... | — |
| α Orionis | 1·0 | 5 47 36 | 82 37 | June 28 ... ... ... ... | — |
| R Geminorum | 7·3 | 6 58 56 | 67 5 | January 19 ... ... | P. |
| R Can. Min. | 8·0 | 7 1 0 | 79 46 | April? Uncertain ... ... | — |
| S Can. Min. | 7·5 | 7 25 7 | 81 23 | July 28 ... ... ... | W. |
| S Geminorum | 9·2 | 7 34 38 | 66 13 | Jan. 5, Oct. 26 ... ... | P. |
| T Geminorum | 8·9 | 7 40 54 | 65 55 | July 28 ... ... | — |
| U Geminorum | 9·1 | 7 46 48 | 67 38 | April 5, July 11, Oct. 16 ... | — |
| R Cancri | 6·0 | 8 8 51 | 77 51 | Between Feb. 15 and April 23 | B. & A. |
| U Cancri | 9·0 | 8 27 45 | 70 37 | August 31 ... ... | W. |
| S Hydræ | 8·5 | 8 46 16 | 86 24 | May 10 ... ... ... ... | — |
| T Cancri | 12·0 | 8 48 40 | 69 37 | At minimum, Sept. 28 ... | — |
| T Hydræ | 6·5 | 8 48 51 | 98 37 | May 6 ... ... | — |
| R Leonis | 5·0 | 9 40 2 | 77 55 | Jan. 2, Nov. 22. At minimum, July 9 ... ... ... | P. |
| R Urs. Maj. | 7·0 | 10 34 41 | 20 29 | July 1. At minimum, March 10 | P. |
| T Leonis | 9·0 | 11 3 36 | 83 47 | Jan. 5, July 24 ... ... | W. |
| R Comæ | 8·0 | 11 57 4 | 70 26 | October 8 ... ... | — |
| R Virginis | 6·5 | 12 31 24 | 82 14 | March 16, Aug. 9 ... ... | A. |
| S Urs. Maj. | 7·5 | 12 37 48 | 28 8 | Jan. 14, Aug. 28. At minimum, May 21 ... ... ... | P. |
| U Virginis | 7·5 | 12 44 0 | 83 41 | May 30, Dec. 28 ... ... | W. |
| V Virginis | 7·0 | 13 20 36 | 92 28 | July ... ... ... | P. |
| R Hydræ | 4·0 | 13 22 4 | 112 33 | Nov. 15. At minimum, Oct. 30 | W. |
| S Virginis | 6·0 | 13 25 42 | 96 28 | May 8 ... ... ... | P. |
| R Boötis | 8·0 | 14 31 1 | 62 39 | July 6 ... ... ... | W. |

| Star. | Probable Mag. | Mean Place, 1860. R.A. h m s | N.P.D. ° ′ | Times of Maxima. | Authority. |
|---|---|---|---|---|---|
| S Serpentis | 8·0 | 15 15 7 | 75 11 | March 11 ... ... | A. |
| R Coronæ | 6·2 | 15 42 49 | 61 25 | Between July 12 and Sept. 30 | A. & B. |
| R Serpentis | 6·5 | 15 44 15 | 74 26 | August 23 ... ... | A. |
| R Libræ | 9·0 | 15 45 40 | 105 49 | Probably not during 1861 ... | P. |
| R Herculis | 8·5 | 15 59 56 | 71 15 | Feb. 12, Dec. 19 ... ... | W. & B. |
| R Scorpii | 9·0 | 16 9 19 | 112 35 | Not during 1861 ... ... | P. |
| S Scorpii | 9·5 | 16 9 20 | 112 33 | April 19 ... ... ... | — |
| S Ophiuchi | 9·3 | 16 26 12 | 106 52 | April 27, Dec. 16 ... | — |
| S Herculis | 7·5 | 16 45 32 | 74 49 | Jan. 13, Nov. 14 ... ... | B. |
| R Ophiuchi | 7·6 | 16 59 44 | 105 54 | August 28 ... ... | P. |
| α Herculis | 3·0 | 17 8 16 | 75 27 | Feb. 5, April 13, June 18, Aug. 24, Oct. 29 ... ... | A. |
| T Herculis | 7·9 | 18 3 48 | 59 0 | April 30, Oct. 7 ... ... | K. |
| R Scuti | 5·0 | 18 40 1 | 95 50 | Jan. 14, March 27, June 6, Aug. 17, Oct. 28 ... ... | A. |
| 13 Lyræ | 4·3 | 18 51 4 | 46 14 | Jan. 25, March 13, April 28, June 14, July 30, Sept. 15, Oct. 31, Dec. 16 | B. |
| R Aquilæ | 6·5 | 18 59 38 | 81 59 | May 26 ... ... ... | A. |
| R Sagittarii | 8·2 | 19 8 28 | 109 33 | February? Irregular ... | P. |
| R Cygni | 8·0 | 19 33 4 | 40 7 | Sept. 23. At minimum, April 21 | — |
| χ Cygni | 5·0 | 19 45 11 | 57 27 | April 20 ... ... ... | A. |
| R Capricorni | 9·5 | 20 3 28 | 104 41 | September 30 ... ... | W. |
| U Capricorni | 10·5 | 20 40 22 | 105 18 | February ... ... | P. |
| R Vulpeculæ | 8·0 | 20 58 10 | 66 44 | Feb. 11, June 21, Oct. 29 ... | W. |
| T Capricorni | 9·0 | 21 14 13 | 105 45 | Jan. 24, Oct. 25 ... ... | S. |
| R Pegasi | 8·5 | 22 59 37 | 80 14 | April 15 ... ... | A. |
| R Aquarii | 7·0 | 23 37 15 | 106 3 | June 13 ... ... | — |
| R Cassiopeiæ | 6·0 | 23 51 18 | 39 23 | Sept. 4. At minimum, March 20 | P. |

*Minima of the Short-Period Variable Stars during* 1861 *in G.M.T., and for the Earth's Mean Distance from each Star.*

## *Algol.*

Maximum 2·3; Minimum 4·0. Whole variation completed in seven hours.

| | d | h | m | | d | h | m | | d | h | m | | d | h | m |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. | 3 | 16 | 50 | Jan. | 23 | 18 | 32 | Feb. | 4 | 5 | 48 | Feb. | 24 | 7 | 30 |
| | 6 | 13 | 39 | | 26 | 15 | 21 | | 15 | 17 | 3 | Mar. | 10 | 15 | 34 |
| | 9 | 10 | 28 | | 29 | 12 | 10 | | 18 | 13 | 52 | | 13 | 12 | 23 |
| | 12 | 7 | 17 | Feb. | 1 | 8 | 59 | | 21 | 10 | 41 | | 16 | 9 | 12 |

| | d | h | m | | d | h | m | | d | h | m | | d | h | m |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| April | 2 | 14 | 5 | June | 27 | 14 | 31 | Sept. | 21 | 14 | 57 | Nov. | 12 | 5 | 37 |
| | 5 | 10 | 54 | | 30 | 11 | 20 | | 24 | 11 | 46 | | 23 | 16 | 52 |
| | 8 | 7 | 43 | July | 20 | 13 | 2 | | 27 | 8 | 35 | | 26 | 13 | 41 |
| | 22 | 15 | 47 | | 23 | 9 | 51 | Oct. | 11 | 16 | 39 | | 29 | 10 | 30 |
| | 25 | 12 | 36 | Aug. | 9 | 14 | 44 | | 14 | 13 | 28 | Dec. | 2 | 7 | 19 |
| | 28 | 9 | 25 | | 12 | 11 | 33 | | 17 | 10 | 17 | | 5 | 4 | 7 |
| May | 15 | 14 | 18 | | 15 | 8 | 22 | | 20 | 7 | 6 | | 13 | 18 | 34 |
| | 18 | 11 | 7 | | 29 | 16 | 26 | Oct. | 31 | 18 | 21 | | 16 | 15 | 23 |
| | 21 | 7 | 56 | Sept. | 1 | 13 | 15 | Nov. | 3 | 15 | 10 | | 19 | 12 | 12 |
| June | 7 | 12 | 49 | | 4 | 10 | 4 | | 6 | 11 | 59 | | 22 | 9 | 1 |
| | 0 | 9 | 38 | | 7 | 6 | 53 | | 9 | 8 | 48 | | 25 | 5 | 50 |

### λ Tauri.

Maximum 4·0
Minimum 4·5
Variation rapid.

| | d | h | m |
|---|---|---|---|
| Jan. | 1 | 13 | 4 |
| | 5 | 11 | 57 |
| | 9 | 10 | 49 |
| | 13 | 9 | 41 |
| | 17 | 8 | 33 |
| | 21 | 7 | 25 |
| | 25 | 6 | 18 |
| April | 14 | 7 | 41 |
| Aug. | 30 | 16 | 28 |
| Sept. | 3 | 15 | 0 |
| | 7 | 13 | 53 |
| | 11 | 12 | 45 |
| | 15 | 11 | 37 |
| | 19 | 10 | 29 |
| Nov. | 17 | 17 | 32 |
| | 21 | 16 | 24 |
| | 25 | 15 | 17 |
| | 29 | 14 | 9 |
| Dec. | 3 | 13 | 1 |
| | 7 | 11 | 53 |
| | 11 | 10 | 45 |
| | 15 | 9 | 38 |
| | 19 | 8 | 30 |
| | 23 | 7 | 22 |
| | 27 | 6 | 14 |

### ζ Geminorum.

Maximum 3·8
Minimum 4·5
Increasing $5^d\,6^h$.

| | d | h | m |
|---|---|---|---|
| Jan. | 9 | 15 | 0 |
| Feb. | 19 | 6 | 12 |
| Mar. | 1 | 10 | 0 |
| | 11 | 13 | 48 |
| May | 1 | 8 | 48 |
| Sept. | 20 | 14 | 0 |
| Nov. | 10 | 9 | 0 |
| | 20 | 12 | 48 |
| | 30 | 16 | 36 |

### S Cancri.

Maximum 8·0
Minimum 10·5
Variation rapid.
R.A. $8^h\,35^m\,56^s$
N.P.D. 70° 28′.

| | d | h | m |
|---|---|---|---|
| Jan. | 6 | 10 | 4 |
| | 25 | 9 | 18 |
| Feb. | 13 | 8 | 32 |
| Mar. | 4 | 7 | 46 |
| Dec. | 4 | 8 | 36 |
| | 23 | 7 | 50 |

### β Lyræ.

Principal Minimum 4·3

| | d | h | m |
|---|---|---|---|
| Jan. | 8 | 16 | 31 |
| June | 12 | 13 | 34 |
| | 25 | 11 | 19 |
| July | 8 | 9 | 4 |
| Nov. | 14 | 10 | 36 |
| | 27 | 8 | 21 |
| Dec. | 10 | 6 | 6 |

| First Maximum (3·4) | Second Minimum (3·8) | Second Maximum (3·4) |
|---|---|---|
| 3 d 2 h after Min. | 6 ,, | 9 ,, |
| | 9 ,, | 10 ,, |

### η Aquilæ.

Maximum 3·6
Minimum 4·4
Increasing 2d 9h.

| | d | h | m |
|---|---|---|---|
| Feb. | 16 | 18 | 7 |
| | 24 | 15 | 17 |
| | 29 | 12 | 28 |
| June | 11 | 13 | 52 |
| July | 17 | 11 | 2 |
| | 24 | 15 | 16 |
| Aug. | 22 | 8 | 13 |
| | 29 | 12 | 27 |
| Oct. | 4 | 9 | 37 |
| Nov. | 9 | 6 | 47 |
| Dec. | 15 | 3 | 58 |

### δ Cephei.

Maximum 3·7
Minimum 4·8
Increasing 1d 14h.

| | d | h | m |
|---|---|---|---|
| Jan. | 3 | 12 | 34 |
| | 14 | 6 | 9 |
| | 19 | 14 | 57 |
| | 30 | 8 | 32 |
| Feb. | 15 | 10 | 55 |
| Mar. | 3 | 13 | 18 |
| | 14 | 6 | 54 |
| | 19 | 15 | 41 |
| | 30 | 9 | 17 |
| April | 15 | 11 | 40 |
| May | 1 | 14 | 3 |
| | 28 | 10 | 1 |
| June | 13 | 12 | 24 |
| | 29 | 14 | 47 |
| July | 26 | 10 | 45 |
| Aug. | 11 | 13 | 8 |
| Sept. | 7 | 9 | 7 |
| | 23 | 11 | 30 |
| Oct. | 9 | 13 | 53 |
| | 20 | 7 | 28 |
| Nov. | 5 | 9 | 51 |
| | 21 | 12 | 14 |
| Dec. | 2 | 5 | 49 |
| | 7 | 14 | 37 |
| | 18 | 8 | 12 |

The corrections to be applied to the observed times before comparing with the Ephemeris may be found by the formulæ in the *Monthly Notices*, vol. xvii. p. 27.

The Ephemeris is, for the most part, based upon the same elements of variation as that of last year. For some of the stars, however, I am indebted to Mr. Baxendell and Dr. Winnecke for their valuable contributions of more correct times than I could otherwise have supplied. In a few cases, when two authorities were nearly coincident, the mean has been adopted; or when widely different, both have been given, as limits.

I have again to express my deep regret at the delay of this annual paper, caused by my unforeseen change of position and all its attendant hindrances; but I will endeavour to supply the Ephemeris for 1862 before the close of the current year.

The Hartwell Variable Star Atlas, commenced and far

advanced during my two years' management of Dr. Lee's Observatory, in England, has of course suffered a temporary check, but will be continued and completed here as speedily as possible.

I find I have overlooked one star recently discovered by Mr. Baxendell, and called by him R *Sagittæ*. Its place for 1860 is R.A. $20^h\ 7^m\ 40^s$, N.P.D. $73°\ 42'$; its range of variation from 8·4 to 10·2 magnitudes; and its minimum, in the present year, will be due on March 10, May 21, July 31, Oct. 11, Dec. 21.

*Madras Observatory, 1861, March 27.*

---

## *Discovery of a New Comet.*

The following observations have been made at this Observatory, by Mr. Ferguson, of a Comet discovered on the night of the 4th of the present month, at the Observatory of Mr. Rutherford in New York, by Mr. A. E. Thatcher.

| | M.T. Washington. h m s | R.A. h m s | Decl. ° ′ ″ |
|---|---|---|---|
| April 10 | 10 10 20·6 | 17 7 56·71 | +59 26 13·53 |
| 11 | 8 38 9·5 | 17 2 32·55 | +60 7 20·53 |

The Comet is circular; about two minutes in diameter, condensed at the centre, and with some appearance of a nucleus.

*Observatory, Washington, April 12, 1861.*

---

The Astronomer Royal has received from Mr. Thatcher, by letter dated 1861, April 21, the following account of the discovery and early observations of the same Comet:—

"I discovered this Comet on April 4, $11^h\ 12^m$, in the head of *Draco*, and fixed its place by the neighbouring stars; its approximate place was—

R.A. $17^h\ 40^m$ North Declination 57°

On April 10, $11^h\ 34^m\ 42^s$, its place was

R.A. $17^h\ 7^m\ 42^s{\cdot}76$ North Declination 59° 30′ 8″

On April 14 (hour not given)

R.A. $16^h\ 36^m$ North Declination 63°

On April 20, $10^h$

R.A. $15^h\ 40^m$ North Declination 68°

"Its brilliancy has remained nearly the same from April 9 to 20; on the 20th it appeared, with an aperture of $4\frac{1}{2}$ inches and power of 30, as bright as the cluster in the sword-handle of *Perseus*, or the nebula of *Cancer*, to the unassisted eye; and with a diameter of 3′."

No details are given as to the method of fixing the Comet's place on April 10, 14, or 20.

---

It appears by a letter from Mr. Parkin, dated St. John's Wood, Regent's Park, May 1st, that the Comet was seen by him on the night of April 29th at $11^h\ 45^m$; estimated right ascension $11^h\ 20^m$, declination 61° 30′; and on the night of May 1st, with the naked eye, the position then being right ascension $10^h\ 45^m$, declination 55° 20′.

---

*Extract of a Letter from M. Le Verrier to Mr. Hind.*

"I do not know if you have remarked in the *Astronomische Nachrichten* that Mr. Lehmann insists that 0·0000005 must be added to the radii-vectores of *Mercury* calculated from my Tables.

"It is a mistake; Mr. Lehmann has not understood that if the alteration he proposes were admitted it would be necessary to change in the same ratio the Earth's distance from the Sun, and thus nothing would be altered in the apparent positions of the bodies. The unit is arbitrary, and Mr. Lehmann does not appear to have a clear conception of that which is adopted in astronomical practice.

"If you think proper to communicate this note to the Royal Astronomical Society, I beg you to do so."

---

The Minor Planets (63) and (64) have been named *Ausonia* and *Angelina* respectively; the latter name refers to Zach's Astronomical Station at Notre Dame des Anges, near Marseilles. The name *Maximiliana* has been proposed for the Minor Planet (65).

The figures 1 and 3 in Mr. Birt's paper on the "Apparent Rotation of a Solar Spot," pp. 144 and 146, are incorrectly placed. Figure 1 should be turned round in its own plane through a right angle, so as to bring the right-hand side uppermost, and figure 3 should be turned round through two right angles.

---

It has been pointed out to the Editor that the numbers in Mr. Drach's auxiliary table for the calculation of the log. sin. and log. tan. of small arcs in the last number of the *Monthly Notices*, pp. 147–152, are to be found in Callet's Tables, and elsewhere. Also that a method of finding the latitude without a clock, by means of an altazimuth, similar to that alluded to by M. Radau, p. 168, is given by M. Littrow, *Memoirs*, t. ii., pp. 321–324 (1826).

---

## MISCELLANEOUS INTELLIGENCE.

Mr. Lassell desires to intimate that in consequence of his going to Malta this summer with his large Equatoreal, his smaller telescopes are to be disposed of; and as *they must be taken down and removed* within the next two or three months, he wishes to dispose of them as early as he can.

The smaller of these is the 9-inch Equatoreal, described in the twelfth volume of the *Memoirs of the Royal Astronomical Society*. The larger is the 2-foot Equatoreal, in part described in the eighteenth volume of the above work, and is the telescope with which the former Maltese observations were made. Both these telescopes are in the most perfect and durable order and condition; and their optical performance is, he believes, sensibly perfect to the most fastidious eye; and excepting that the 9-inch has never had a clock-work driving-motion applied, all the conveniences which frequent use could suggest have been successively added.

Mr. Lassell will be glad to answer any inquiries respecting either or both telescopes which a purchaser may wish to make.

*Bradstones, Sandfield Park, near Liverpool,*
*23d April*, 1861.

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## RECENT PUBLICATIONS.

The twelfth volume of the *Smithsonian Contributions to Knowledge* contains an account by Lieut. Gilliss of the Total Eclipse of the Sun on Sept. 7th, 1858, as observed near Olmos in Peru, (see *Monthly Notices*, vol. xx. p. 298) and also the

Astronomical Observations in the Arctic Seas by the late Dr. Kane, made during the Second Grinnell Expedition in search of Sir John Franklin in 1853, 1854, and 1855, at Van Rensselaer Harbour and other points in the vicinity of the north-west coast of Greenland, reduced and discussed by Charles A. Schott. The observations determine the latitudes and longitudes of Van Rensselaer Harbour and various other stations, and appended to the paper is a map based on the astronomical results.

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*Handbuch der Kugelfunctionen.* Von Dr. E. Heine, 8vo. Berlin, 1861.

The work is intended to be as well an introduction to as a systematic exposition of the theory of the class of functions commonly called Laplace's functions (but originating in Legendre's functions of a single variable) which play so important a part in the theories of attraction and the figure of the earth, and in other parts of mathematical physics. The author has consulted, and in part reproduced, the investigations of the last-named two geometers, and of Gauss, Jacobi, Lejeune-Dirichlet, Green, Neumann, Lamé, and others, and his treatise appears to be a most valuable monograph on this part of mathematics. It may be remarked that the term Kugel-function (sphere-function) employed by him after Gauss, is somewhat too restricted, as the researches of, in particular, Neumann and Lamé relate to ellipsoids of revolution and of three unequal axes. The latter part of the work comprises applications to the theory of mechanical quadratures (after Gauss) and to the theories of attraction and heat.

---

*The Mathematical Works of Isaac Barrow, D.D.* Edited for Trinity College by W. Whewell, D.D., Cambridge, 1860.

The principal contents of the volume are the Lectures which Barrow delivered as Lucasian Professor of Mathematics, an office which he held from 1664 to 1670. And these consist of three series,—the Lectiones Mathematicæ, the Lectiones Opticæ, and the Lectiones Geometricæ; the first being on the general principles of mathematics, the second containing propositions of optics proved geometrically, and the third, treating of properties of curve lines. The volume contains also the preface and dedication to Barrow's edition of Euclid, and the preface to his edition of the works of Archimedes, Apollonius, and Theodosius.

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